

REMARKS

1. Applicant gratefully acknowledges the Examiner's withdrawal of previous rejections.

2. Applicant requests entry of the current amendment to the claims. The amendment to Claim 3, 6, 8, and new claims 15-16 has antecedent basis in the spec at page 8 lines 17-18. The amendment to claim 10 has antecedent basis in the spec at page 16 lines 7-9. No new matter is introduced by the amendments.

Claim Rejections – 103(a)

3. Applicant acknowledges the Examiner's rejection of claim 3-8 and 13-14 under 35 U.S.C. 103(a) as being unpatentable over Oki (JP5-248496), in view of EP 0767509 (EP '509), but respectfully disagrees.

Regarding claim 4 and 13, the cited combination of references does not result in the claimed invention without making nonobvious changes or departures from the clear teaching of one or both references. In particular, Oki does not teach "*foreign matter has a longitudinal direction...perpendicular...*" and EP '509 does not teach "*piece of foreign matter*" or "*warning sound.*" Therefore combining requires additional modifications that are not suggested by the references themselves. There is no reason one of skill in the art of power transmission belts would combine these two references or look to EP '509 to solve any problem with Oki. The following remarks further explain problems with the cited combination of references, in support of nonobviousness.

(1) These two references address wear problems in two entirely different arts: Oki relates to flexible belt wear on automotive pulleys, while EP '509 to rigid radome wear from raindrops on aircraft.

(2) They relate to two entirely different effects: Oki uses noise makers to warn a driver who cannot see the belt; while EP '509 uses visual indicators that require visual inspection. Nowhere in the references is there any suggestion to combine these two different effects.

(3) They present entirely different reasons for material choices: Oki only suggests using hard materials such as metal or glass, not thermoplastics. Oki teaches

that a hard material will emit a sound from contact with the pulley, so that a driver of the vehicle would easily recognize it. ([0010]). If Oki were to use the same material or a softer material than metal or glass, then the sound would most likely not be loud enough for his purposes. Thus, this combination would most likely not provide a sufficiently audible “*warning sound*” as recited in claim 4 because of the lack of “*foreign matter*.”

On the other hand, EP ‘509 teaches using the same thermoplastic material for the pellet and the radome (but of a different color for visibility). EP ‘509 uses the same thermoplastic material for pellet and body so it will be integrally formed through partial fusion (col. 3 lines 19-22; claim 11), and to exhibit a consistent wear rate for both body and pellet (col. 3, lines 5-8), and to not disrupt the reception of electromagnetic waves (col. 5 line 58 – col. 6 line 1). If the wear rate was not the same, then the color change would not be proportional to wear (col. 5 line 42). Since EP ‘509 teaches use of the same thermoplastic matter, EP ‘509 does not teach use of “*foreign matter*” as recited in claim 4.

Thus, combining the references requires some nonobvious modifications. If the same material as taught by EP ‘509 is used, some kind of modification is required to produce a desired warning sound. But if a hard material is used as taught by Oki, then some reason is needed to justify using one of the shapes of EP ‘509. The justifications of EP ‘509 (integral part and even wear and wave reception) no longer apply for a hard material in a flexible belt. There is no obvious reason to combine based on the teaching of the references. There is no suggestion to combine noise and color detection effects. There is no suggestion the same article could or should do both. Using a special shape (with “*a longitudinal direction...perpendicular...*”) as taught by EP ‘509, but of a hard material as taught by Oki would only present complications in processing, need for alignment, etc. but still only result in the basic noise effect of Oki, not in the additional effects and advantages of the present invention.

(4) The manufacturing processes of the two are entirely different. Oki teaches his hard elements are little round things embedded a certain distance *d* from the contact surface of the belt (Fig’s 2 & 3). This is probably done by laying them on (or pressing them into) a layer of rubber as the belt is built up on a mold. EP ‘509 teaches pellets that are mounted on an inner mold part before the mold cavity is injected with

thermoplastic. Therefore, the pellets are located at an inner surface of the radome. There are obvious difficulties transferring the ideas of EP '509 for injection molded articles into the rubber composite belts of Oki. Therefore the combinations suggested by the Examiner are not enabled by the references, or are not obviously likely to succeed.

(5) As a result of the above difficulties, the combination is not likely to be successful at providing "greater, prolonged wear indication" or "different degrees of wear indication" for a belt as supposed by the Examiner. (Likelihood of success is a necessary component of a prima facie case of obviousness.) If the same material is used as taught by EP '509, then there will be no prolonged noise to indicate wear. If a hard material is used as taught by Oki, then it will not wear down. A pointed hard element may not make sufficient noise to suit Oki's purposes at all.

All of the above supports the nonobviousness of claim 4 (as well as 6, 10, 13, and 14). Reconsideration of the rejection is therefore requested.

Regarding claim 5, Applicant respectfully submits that in addition to the reasons for patentability of claim 4 presented above, claim 5 of the present invention has unexpected, nonobvious results, not suggested or predicted from the references. The specification explains the progressively increasing noise of the Applicant's design, "the warning sound becomes louder as the contact face 18a becomes more worn" (page 8 lines 16-18) or as more pieces become exposed (page 10, lines 19-22). The combination of references does not suggest this, since either the pellet will be the same material as the body (per EP '509, implying no noise) or a hard material (per Oki, implying no progressive wear or increasing noise). Therefore, reconsideration of the rejection is requested.

Regarding claim 3 and 8, Applicant respectfully submits that the Oki does not disclose or suggest either a harder pulley to prevent wear or a softer "hard element" to prevent wear. This is because Oki does not envision the invention of Applicant, namely a progressively increasing warning sound as the "soft" foreign matter wears down. Instead, Oki envisions that the "driver of vehicles" will "easily" recognize the sound

([0010]) and change the belt (*Id.*). In other words, Oki teaches a sound that is sudden and loud and that the belt change will be quick enough to prevent any undue wear on the pulleys. As discussed above, EP '509 does not resolve this. Therefore, in light of these remarks and the current amendment, explicitly reciting that the "*sound becomes louder,*" claim 3 and 8 should be considered nonobvious over the cited references, and reconsideration of the rejection is requested.

Regarding claim 6, (in addition to the problems combining the references mentioned above) Applicant respectfully submits that the Examiner has interpreted EP '509 too broadly. EP '509 does disclose a plurality of pellets (10) of different lengths and colors, (6th from last paragraph, claim 4), however, these are only disclosed as cylindrical pellets (10) which are also variously called pads or patches and are indicated in Fig. 1-3 as being wider than tall, thus not "*having a longitudinal direction...perpendicular...*" as recited in claim 6. The only discussion of conical pellets which have a longitudinal direction (18, 20, 21, 22) discloses them equidistant from the surface (see Fig. 6 and 7; 5th from last paragraph). Since the limitation "*having a longitudinal direction*" is not disclosed in the prior art in connection with distance of one piece "*different from a distance*" of another piece, reconsideration of the rejection is requested.

Regarding claim 14, Applicant respectfully submits that the Examiner has interpreted EP '509 too broadly. EP '509 only discloses conical pellets that extend from a first (outer) surface to a second (inner) surface (see Fig. 6 and 7) or with tip slightly below the outer surface (col. 5 lines 36-38). Because of the method of manufacture described, the pellets (18, 20-22) will be flush with the second surface. There is no suggestion in the references alone or combined to place the conical pellets closer to the first surface than the second surface as recited in claim 14. Therefore, reconsideration of the rejection is requested.

4. Claims 10-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Oki (JP5-248496), in view of EP 0767509 (EP '509) as applied to

claim 3-8 and 13-14, and further in view of JP 6-281517 (JP '517), but respectfully disagrees. The arguments for claims 3-8 and 13-14 apply with equal force here. Also, sound measurements of JP '517 are distinct from those of the present invention. The present amendment to claim 10 is meant to clarify the distinct measurements of the present invention.

JP '517 uses sound to measure the tension of a belt by measuring the characteristic or natural frequency of the vibration of the belt. The frequency is directly related to the tension and mass of the belt. (Paragraph [0012], [0032]). The present invention takes a measurement of the "*volume or sound pressure*" of a "*specific sound*" which occurs cyclically (claim 11) as the embedded foreign matter hits a pulley. (See specification at page 16, lines 1-9). The "*specific sound*" is most likely a complex spectrum of frequencies, but the occurrence with respect to a particular pulley is once every rotation of the belt – i.e. the "*frequency*" of occurrence of the specific sound – or the "*predetermined cycle*." Such a measurement is not taught or suggested by JP '517. Therefore, reconsideration of the rejection of claims 10-12 is respectfully requested.

FEE STATEMENT

Any fees which may be required, though none are believed due, are authorized to be charged to Assignee's deposit account number 07-0475.

In light of the forgoing amendments and remarks, favorable reconsideration of the allowability of all claims is respectfully solicited.

Respectfully submitted,
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